olecranon; suture, then massage; massage alone in this fracture gives bad results.

For the past five years the author has treated all the cases of fracture, both in hospitals and private practice, by the method above outlined, and claims only good results. He employed massage in the treatment of fractures of the lower extremity of the radius some fifteen years ago, and claims the priority for this form of treatment.

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JAFFÉ ON THE THERAPY OF HABITUAL SCOLIOSIS.

In a recent number of *Volkmann's Sammlung klinischer Vorträge*, Dr. Max Jaffé, of Posen, discusses the myopathic theory of scoliosis, and the therapy based thereon.

He does not think that the curvature is produced by antagonism in muscular action (the muscles on the concave side of the curve being contracted, while those on the other side are in a condition of extension.) He states that the position in which, according to myopathists, the muscles contract in order to maintain their posture, are not those in which we are accustomed to employ muscular action, they are positions of rest, maintained without any muscular contraction.

Differences in muscular development on both sides are never observed in commencing scoliosis, and the results of autopsies on which myopathists base their theories only exist in chronic cases with extreme deformity.

The therapeutics based on the myopathic theory, unilateral massage and exercise, are of no service whatsoever, and are not comparable to the symmetrical development of the entire muscles of the back. Whatever successes have been obtained by myopaths depend on the fact that it is impossible to act upon special muscular groups without acting on others as well.

Therefore it should be endeavored to secure a uniform and symmetrical development of the spinal muscles. This treatment satisfies the physician that in scoliosis badly developed and atrophied muscles are present in all portions of the back, and of the correctness of Meyer &

Volkmann's theory that scoliosis depends on a gravitation deformity.

It is a well-known fact that in order to maintain an upright posture constant muscular action is necessary; this is shown by the fact that a person becomes tired after a longer or shorter time. If he desires to continue standing he assumes one of the numerous positions of rest in which no muscular force is exerted. A common position of the kind is to place the right foot somewhat to the side, shifting the weight to the right side, and bending the neck and trunk towards that side. The left knee is somewhat bent, consequently the left side of the pelvis is lowered and the right elevated. This produces a corresponding curve of the spine toward the left side. All this is done without muscular action and simply by the pressure of the joint surfaces, the motion being limited by ligaments.

There are any number of such positions of rest both in standing and sitting and if they are frequently assumed by growing individuals of weak muscular development, they finally become habitual.

The fixation of the deformity is due to the fact that the parts situated on the convex side of the curve, which are relieved from pressure, undergo development, while those on the opposite side become more or less atrophied. The factors which cause fixation of the deformity are potent usually only during the period of growth, because the bones and cartilages are soft and will more readily assume an abnormal form which is necessary to the perpetuation of lateral curvature.

An abnormal weakness of the bones and other tissues is probably also responsible for the causation of the deformity. Otherwise there is probably no specific affection of the tissues in chronic scoliosis.

Dr. Jaffe believes that quite a number of static scolioses become habitual, and this will become more apparent if surgeons take the trouble to examine cases of inequality of the lower limbs for deviation of the spine.

The reasons why static scoliosis does not become habitual are: (1). That static cases do not as a rule take place at a time of life which is favorable for that change. (2). That the muscular weakness which is present in the habitual form is not always present in the static. (3). That static scoliosis is only observed during sitting or standing and disappears at other times. There is also another factor which acts to prevent the development of habitual scoliosis.

Static scoliosis is due to the fact that one extremity is shorter and also weaker than the other, the convexity of the curve being toward the shortened limb, but in standing or walking the weight of the body is transferred to the side of the longer leg and this produces a compensating curve with the convexity towards the sound side.

Heredity is also possibly a factor in the production of scoliosis, the deformity being transmitted from parent to child.

It is necessary to determine whether the scoliosis is fixed or static; this has been done by extension of the body but is regarded by Jaffe as unreliable, for the spinal processes may show no deviation although the vertebral bodies have undergone rotation. It is better in cases of supposed habitual or fixed scoliosis to look for torsion of the vertebræ and if this is present in the slightest degree the diagnosis of fixation is confirmed.

The best means of diagnosing torsion is by placing the patient flat on his abdomen with his arms extended along the head. In good light the inspection will reveal the least unequalities on both sides.

The writer believes that cases where redressement is possible should not be classed as scoliosis for in many of these cases the lateral curvature is only the expression of tired and weak muscles, and is found absent at the next examination. This stage is rather a predisposition to than an actual condition of the trouble.

Some cases of permanent deviation with slight fixation are sometimes rectified by depressing the pelvis, either by raising the foot by a thicker sole, or by an oblique seat in sitting.

An important indication for treatment is the strengthening of the muscles of the back. No special muscles are to be treated, but the entire muscular layer of the back.

Gymnastic exercises particularly fulfill this indication. The child is placed flat on the abdomen, with arms extended forward and is made to bend the head and upper part of the trunk backward. At first this exercise is performed with difficulty, but as the muscles become strengthened it requires less and less exertion. It is to be practiced several times a day, in short sittings and the clothing need not be removed.

Massage is an excellent means of strengthening the muscles and is to be employed twice daily.

Faradism is useful but less so than massage. In cases of slight scoliosis massage is directly curative. Cold sponge baths and douches should be employed as adjuncts.

Corsets and similar apparatuses are of slight value.

The above described treatment is very effective in commencing scoliosis, and if properly carried out prevents fixation of the spine.

These same measures are equally useful in the later stages of scoliosis in conjunction with measures directed to the removal of the fixation.

To overcome the deformity it is usually recommended to place the patient in a position by which the existing lateral curvature is compensated, or at least converted into the opposite. If, however, there are several curves any portion which will rectify one will increase the other. To counteract this disadvantage it is recommended to raise or lower the pelvis in dorsal curvature for example, but these means are insufficient.

Even in cases of single curvature this method is valueless, since a compensatory curvature usually develops and may even be induced by measures used to overcome the existing deformity.

The writer's method of redressement is as follows: The patient is placed on the abdomen and before beginning the manœuvres the operator maps out the position of the rotated and permanent vertebræ, and also the points of greatest prominence. At these points the assistant presses in the prominent parts forcibly and the vertebræ connected with them towards the median line or even beyond it. The first part of the manœuvre rectifies the rotation and the succeed compensates or over compensates for the lateral deviation. If there are two convexities the other hand of the assistant redresses the second deformity, and if there are more than two curvatures a second assistant is required. Pressure should never be made upon one convexity without counter pressure upon the other prominences. The great advantage being that the rectification of one deformity does not augment another as all curvatures are attacked simultaneously. It has been proposed to carry out these manœuvres by machinery but the hand is more exact and accurate. This form of redressement should be practiced once or twice daily by trained assistants, the spine being carefully inspected before commencing the manipulations.

The good effects of this treatment are observable after the child has been treated a short time, by a greater symmetry of the lateral contours of the trunk. The effect is not momentary but remains for a short time. No greater force than that of the hand should be used.

For exceptional cases of markedly fixed scoliosis the author employs lateral suspension according to the method of Lorenz. The patient is placed on the side on a firm, well upholstered bar and rests upon the greatest prominence. In this way the head and neck fall to one side, and the lower extremities to the other. The body must be placed in such a position that the force works in the same manner as in the above described form of redressement by the hand. The body is to be placed midway between the dorsal and the lateral position, and the less the body is supported at the sides the greater is the force acting on the deformity.

This method though very effective is inferior to the first, insomuch as several prominences can not be acted upon at the same time.

The ideal method for the treatment of scoliosis would be an apparatus which secures permanent redressement. The objection to this is that any amount of pressure sufficient to correct the deformity can not be borne continuously.

The author is firmly persuaded that we must give up all idea of efficient permanent redressement in fixed scoliosis. This applies also to Sayre's plaster jacket. The action of a plaster dressing on the extremities can in no respect be compared with its action on the thorax, which is constantly changing its form during respiration. The corset may to a certain extent compensate for the mobile portion of the deviation, but this ought to be accomplished by strengthening the muscles, besides this, the corset prevents exercise of the muscles, and after it is laid aside the deformity soon returns owing to muscular weakness.

Extension produced by the plaster jacket produces a diminution of the antero-posterior curve of the spine and this directly favors the progressive development of scoliosis, and has no effect in the correction of the rotation.

The author has often observed in children treated with the corset an increase in the fixation. If the corset is to be used it should be a removable one and worn for several hours only during the day. The corset is of advantage in certain cases in which the scoliosis is accompanied by a diminution of the normal kyphosis of the spine, *i, e.*, cases of kypho-scoliosis. In these cases there is no danger of an excessive correction of the antero posterior curve, but these cases are rare, and even in them, the corset is only to be regarded as a support and only to be employed in combination with the above described measures.

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